



**MONTEREY PENINSULA  
ENGINEERING**

**DESIGN BID PROPOSAL FOR  
ASR 5 & 6**

**REVISION**

Please complete the following requirements:

1. BID FORM: Bid Item 2, is to be applied **only to the remainder of the design services that are not included in bid items 1, 3-42**. Provide a cost estimate for bid item 2 as described below in 3.  
(Please see the attached spread sheet in Exhibit A)
2. BID FORM: do not aggregate the bid prices anywhere you were not asked to do so. True Bid prices are required for each of the discipline drawings. Remove the many \$1000 bid items for various discipline drawings and enter correct and accurate prices for the discipline drawings.  
(Please see the attached spread sheet in Exhibit A)
3. DESIGN PROFESSIONAL SERVICES COST ESTIMATE: provide a professional services cost estimate of the design services including itemized Task, Task Description, Hourly rate, professional classification, estimated hours for completion of the tasks, and costs for each line item. The dollar amounts for design services are to match the proposal form PF-3, items "a, b, c, d".  
(Please see the attached spread sheet in Exhibit A)
4. PROPOSAL FORM PF-3 "e": **all items "a, b, c, and d" on this form are for design services/pre-construction services during design, and are comprised of bid items 1-42. Total construction cost "e" is to be entered on form PF-3, as the total of bid items 43- 73.**  
(Please see the attached spread sheet in Exhibit A)
5. CONTRACTOR'S EQUIPMENT MANUFACTURER'S LIST: bid addendum 3 required the list of the major equipment the contractor intended in the bid price. This had not been provided. Review the attached list of Cal Am equipment; circle the choice of equipment, and that equipment only on the list. Return the list you have selected.  
(Please see the attached Exhibit B for highlighted equipment)
6. LIST OF DRAWINGS (DRAWING INDEX): prepare the required list of drawings anticipated for the project in a drawing index. Approximately 80-90 drawings are required for this project. Justify your index as necessary so that the reviewer understands your intent for scope of design services.  
(Please see the attached Exhibit C for drawing lists)
7. LIST OF CSI SPECIFICATIONS: prepare a list of CSI specifications that are anticipated for this project. See the attached CSI list of specifications, review and delete by cross-out, any inappropriate specifications, and if necessary why a specification is not applicable.  
(Please see the attached Exhibit D for anticipated CSI specs)
8. SDS1-10: see attached copy of the scope of work requirements that were included in the RFP. Initial each page at the bottom as confirmation that you are providing the required scope of work. If you have exceptions, provide clear explanations.  
(Please see initials on scope pages in Exhibit E)
9. Bid ADDENDUM 3: provide the list of SCADA/instrumentation equipment you have selected for the project. This list was required as part of the proposal. Circle the equipment for this project from the list, and return the list. Do not remove any of the pages.  
(Please see the attached Exhibit B for highlighted equipment)

10. BID ADDENDUM 3: select one of the two system integrators: either Telstar or Controls System West. This selection was required as part of the proposal.  
(We plan on using Control Systems West)
11. BID ADDENDUM 5: Provide confirmation that your bid offer includes the Allen Bradley 18 PWM VFD per addendum 5. Provide the option as described for the active front-end drive as an option items 1-17 are provided in the bid price.  
(Please see the attached spread sheet in Exhibit A)
12. SOUND ENCLOSURE: contractor is required to include in the bid price **the cost for full enclosure on all four sides around the pump and motor**. A roof is not required. CAW will not rely on a sound study to leave off a side of the enclosure as the contractor suggests in the proposal.  
(Cost for the 4th addition panel has been added to the estimate)
13. SCHEDULE: the schedule is not acceptable. However, your schedule will be revised if your proposal is accepted.  
(Schedule will be revised one Proposal is accepted)
14. LABOR RATES FOR TRADES : provide the trade classifications and hourly rates including straight time, overtime time, and double overtime  
(Please see the Exhibit F)
15. ERRORS AND OMISSIONS: your proposal shall include errors and omissions insurance.  
(It is included)
16. BUILDING: provide a clear description in sufficient detail of building materials, HVAC equipment size (BTU/hr.) you intend to use. This was required for this proposal.  
(150,000 BTU/HR 1EA/Room, building materials identical identical to ASR 3)
17. LONG LEAD TIME ITEMS: provide list and lead times for long lead-time items.  
(Please see the Exhibit G)
18. GENERATOR: provide the required information per Bid Addendum 5.
19. PERMITS: provide the permit lists as required for this proposal  
(permits include building, grading, and encroachment permit)

ANSWER FOR #18.

(As required, we are employing 18 pulse drives which come with integral filters that clean the power to such a level that concerns for generator tripping (as would be for 6 pulse VFDs) are significantly alleviated.

We would simply spec a properly rated generator that complies to California standards. Such a rated unit should suffice and not be subject to tripping concerns due to excess harmonic noise (from the VFDs).)

# EXHIBIT A

MONTEREY PENINSULA WATER SUPPLY PROJECT  
 ASR 5 AND 6 - DESIGN BUILD  
 ABOVE GROUND FACILITIES PROJECT

02/06/2019+F85  
 Rev. 1

BID ITEM	APPROX. QTY.	UNIT	DESCRIPTION WITH UNIT PRICE (PRICE IS INCLUSIVE OF ALL APPLICABLE TAXES, PROFIT, INSURANCE, BONDS AND OTHER OVERHEAD)	UNIT PRICE	TOTAL ITEM PRICE
<b><u>PREDESIGN/DESIGN SERVICES</u></b>					
1	1	ALLOW	Community Outreach	\$7,000.00	\$7,000.00
2	1	LS	Design Services (Part III. Scope of Design Services, SDS 1-10)	\$89,200.00	\$89,200.00
3	1	LS	Dust and Noise Control Plan & Implementation	\$30,000.00	\$30,000.00
4	1	LS	Building Code Review, Procedures & Plan	\$4,000.00	\$4,000.00
5	1	LS	Mobilization, Security Fencing, Access Plan	\$40,000.00	\$40,000.00
6	1	LS	Temporary Power Plan	\$5,000.00	\$5,000.00
7	1	LS	Mobilization, Security Fencing, Access Plan, etc.	\$40,000.00	\$40,000.00
8	1	LS	SWPPP/Erosion & Sediment Control Plan	\$3,000.00	\$3,000.00
9	1	LS	Environmental Requirements (Permits 2.7.3)	\$2,300.00	\$2,300.00
10	1	LS	AVETTA Certification (2.7.3)	\$500.00	\$500.00
11	1	LS	Utility Potholing & AutoCAD Mapping	\$15,000.00	\$15,000.00
12	1	LS	Staking/Surveying Plan, Mapping, & Implementation	\$8,000.00	\$8,000.00
13	1	LS	Geotechnical Investigations & Borings, Soils Report (2 Sites)	\$20,000.00	\$20,000.00
14	1	LS	Demolition of Existing Structure Plan	\$5,000.00	\$5,000.00
15	1	LS	Traffic Control Plans & Implementation	\$8,000.00	\$8,000.00
16	1	LS	Acceptance Testing Plan & Implementation(2.7.4)	\$5,000.00	\$5,000.00
17	1	LS	Quality Management Plan (Design & Construction, (2.7.5)	\$5,000.00	\$5,000.00
18	1	LS	Materials Testing Plan (e.g. Concrete & Soils)	\$35,000.00	\$35,000.00
19	1	LS	Pump Test Plan & Performance Testing	\$8,000.00	\$8,000.00
20	1	LS	Well Pump/Line shaft Vibration Test Plan, & Critical Speed Calculations	\$4,000.00	\$4,000.00
21	1	LS	Inspection & Test Procedures & Plan	\$4,000.00	\$4,000.00
22	1	LS	Factory Acceptance Testing/Designer Inspections, (SDS-9)	\$40,000.00	\$40,000.00
23	1	LS	Operations & Maintenance Training (2.7.6)	\$4,000.00	\$4,000.00
24	1	LS	Installation Operation, & Maintenance Manual (IOM), Scanned pdf & CD,	\$8,000.00	\$8,000.00
25	1	LS	Start-Up & Commissioning Procedures Plan	\$3,000.00	\$3,000.00
26	1	LS	Facility/Utility Shut-Down Plan	\$3,000.00	\$3,000.00
27	1	LS	Warranty & Acceptance Test Plan	\$3,000.00	\$3,000.00
28	1	LS	CSI format Technical Specifications (16 Divisions)	\$44,000.00	\$44,000.00
29	1	LS	Assess Validity, Evaluate, Analyze Accuracy of Preliminary Design	\$15,000.00	\$15,000.00
30	1	LS	Architectural Drawings/Renderings for Agency Approvals	\$70,000.00	\$70,000.00
31	1	LS	Civil Drawings, Auto Cad, Full and Half-Sizes	\$140,000.00	\$140,000.00
32	1	LS	Mechanical Drawings, Auto Cad, Full and Half-Sizes	\$140,000.00	\$140,000.00
33	1	LS	Electrical & Drawings, Auto Cad, Full and Half-Sizes	\$23,000.00	\$23,000.00
34	1	LS	Plumbing Drawings, Auto Cad Full and Half-Sizes	\$4,000.00	\$4,000.00
35	1	LS	Instrument Drawings, Auto Cad Full and Half Sizes	\$2,000.00	\$2,000.00
36	1	LS	HVAC Drawings, Auto Cad, Full and Half Sizes	\$4,000.00	\$4,000.00
37	1	LS	Process (P& ID) Drawing Updates, Add Disinfection, Auto Cad, Full/Half Sizes	\$3,000.00	\$3,000.00
38	1	LS	As-Built Drawing & Conformed Drawings in Auto-CAD	\$27,000.00	\$27,000.00
<b><u>PROJECT MANAGEMENT/CONSTRUCTION MEETINGS/REVIEWS</u></b>					
39	1	LS	Design Meetings (10)	\$20,000.00	\$20,000.00
40	1	LS	Construction Meetings (24)	\$24,000.00	\$24,000.00

41	1	LS	Constructability Review (3)	\$5,000.00	\$5,000.00
42	1	LS	Value Engineering (3)	\$5,000.00	\$5,000.00

**PROCUREMENT/CONSTRUCTION**

43	1	LS	Mobilization/demobilization, Phase 1	\$75,000.00	\$75,000.00
44	1	LS	Mobilization/demobilization, Phase 2	\$75,000.00	\$75,000.00

**CIVIL/MECHANICAL/PROCESS**

45	1	LS	Site Preparation for Phase 1 Well Drilling (2 Sites)	\$65,000.00	\$65,000.00
46	1	LS	Site Preparation, All other work, Phase 2	\$200,000.00	\$200,000.00
47	1	LS	On-Site Drainage Percolation System, Infiltration Tests	\$75,000.00	\$75,000.00
48	1	LS	AC Pavement and Subgrade (Tech, Req, Appendix 1)	\$75,000.00	\$75,000.00
49	1	LS	Site Access & Perimeter Chain Link Fencing, & 7 ft. height, Double Gates (both sites)	\$40,000.00	\$40,000.00
50	1	LS	ASR Underground Pipeline connections to General Jim Moore Blvd at ASR 5 and 6 (Sheet I-1, Appendix 1)	\$65,000.00	\$65,000.00
51	1	LS	ASR Above Ground Piping/Valves (Sheet I1 G1, M1 Appendix 1)	\$170,000.00	\$170,000.00
52	1	LS	Cla-Val Valves, remote controlled, fusion bonded epoxy coating in/out, 110V solenoid manual override, stainless steel trim, indicating limit switches, pilot strainer, open/close speeds, isolation cocks (Tech Req, G1, M1 Appendix 1)	\$80,000.00	\$80,000.00
53	1	LS	Flow meters, Sparling 656 Tigermag magnetic, local display plus remote transmission 4-20 mA output, polyurethane liner, bidirectional rate and bidirectional totalizing functions (Tech Req, Appendix 1)	\$80,000.00	\$80,000.00
54	2	EA	Pump water flush lube system, real time flow measurement and lube line differential pressure instrumentation, with interlock shutdown of well pump upon loos of low or pressure in lube line (Tech Req, Appendix 1)	\$20,000.00	\$40,000.00
55	1	LS	ASR Underground Pipeline connections to General Jim Moore Blvd at ASR 5 and 6 (Sheet I-1, Appendix 1)	\$50,000.00	\$50,000.00
56	1	LS	ASR Above Ground Piping/Valves (Sheet I1 G1, M1 Appendix 1)	\$170,000.00	\$170,000.00
57	1	LS	Isolation Valves, ( with manual operators larger than 8" diameter)	\$35,000.00	\$35,000.00
58	2	EA	Vertical Turbine Pumps, 800 HP, 480V, 3 ph, 3000 gpm, 792' TDH 82% Efficiency, TEFC motor, zinc less bronze allow C952 impeller, intermediate shaft bearings	\$0.00	\$0.00
59	2	EA	12" x X-42 Grade Column Pipe, 550 ft. long, enclosed tube water flush tube and shaft design	\$0.00	\$0.00
60	2	EA	12 x 8 Baki "FCV" Downhole Flow Control Valve, set at 500' bgs	\$0.00	\$0.00
61	1	LS	Complete Chemical Offloading Facility for bulk sodium hypochlorite deliver off-loading, with wash-down pad sized for WB-50/5,000 gallon storage tanker truck, local control panel, audible alarm, and warning lights, sump, and sump pump and underground chemical resistant storage tank 1000 gal., Compressed air supply to pressurize truck and offload chemical, Operator Interface Panel with level indicator for chemical level in bulk tank, safety showers (2), eyewash stations (2), chemical injecting quills, and injecting ports with static mixers for hypochlorite injection ( at ASR 5 SITE ONLY.)	\$100,000.00	\$100,000.00
62	1	LS	Complete Disinfection Process Faculty for Sodium Hypochlorite system (12.5% solution strength), assume dosing up to 3 mg/l, storage of 30 days supply of bulk storage, FRP bulk storage tank, (2) day tank, (2) bulk transfer pumps, (2) chemical metering pumps, piping and valves, and ancillary equipment. Note a P & ID has not been completed. Contractor shall attach proposed P & ID with the bid for approval. Assume double containment for all chemical storage and dispensing equipment (at ASR 5 SITE ONLY).	\$125,000.00	\$125,000.00

**Structural/HVAC**

				\$0.00	
63	1	LS	Complete ASR 6 Electric/Controls Bldg. 380 sq. ft. interior minimum, Removable Sound Attenuation Enclosure around pump, non-combustible CMU with Concrete Plank Roof, UBC Type U Building Classification, Mediterranean style, similar to ASR 3 & 4 (Appendix 1)	\$455,000.00	\$455,000.00

64	1	LS	Complete ASR 5 Electric/Controls Bldg. (min interior 350 sq. ft.) and Disinfection Bldg. ( min. interior 650 sq. ft.). interior minimum, Sound Attenuation Enclosure around pump, non-combustible CMU with Concrete Plank Roof, UBC Type U Building Classification, Mediterranean style, similar to ASR 3 & 4 (Appendix 1)	\$1,018,100.00	\$1,018,100.00
65	2	EA	Complete HVAC, Air Conditioning with Economizer mode systems each for Electrical/control Building (Tech Req, Appendix 1)	\$25,000.00	\$50,000.00
<b>Electrical</b>					\$0.00
66	2	EA	Complete Electrical Systems, for NEC calculated full-load amperage (FLA) of 1282 amperes, which includes pump, & misc. auxiliary loads, as shown in "Table MSB & Feeder Load Schedule" on Drawing E-1. Panels sizes for 1600-ampere meter/main	\$600,000.00	\$1,200,000.00
67	2	EA	Short Circuit and Arch Flash Studies, developed per Cal Am standards, and PGE system data (Appendix 1, 3, 4).Layout per Dwg E-2, Appendix 1.	\$23,000.00	\$46,000.00
<b>Instrumentation/Controls</b>					\$0.00
68	2	EA	Complete control system, functionality including start, stop, speed control of the pumps, based on either flow or pressure set point, or manual adjustment. actuation of the Cla Val process valves, Alarm, warning and shutdown interlock functions, record and store process operational data, communicate with main Cal-Am SCADA system, PLC with 10% spare digital I/O, local control panel (LCP), (Tech Req, Drawing I-1, Appendix 1)	\$380,000.00	\$760,000.00
69	2	EA	Variable Frequency Drive (VFD), indoor NEMA 1G, 18 pulse PWM, No bypass, Heavy Duty Service (50 C rated), dv/dt output filter, Allen Bradley Power Flex 755	\$155,000.00	\$310,000.00
70	2	EA	Programmable Logic Controllers, Allen Bradley only. PLC program and OIP screens programmed to control the pumps and show booster and well pump operation, status, and alarms, indicated in Tech requirements and on P & ID, Appendix 1	\$80,000.00	\$160,000.00
71	2	EA	Data System to Transmit Data via SCADA to Cal Am's central Office in Pacific Grove via cellular modem.	\$20,000.00	\$40,000.00
72	2	EA	Local Operator Interface Panel (OIP), on front of each control panel. PLC program and OIP screens programmed to control the pumps and show booster and well pump operation, status, and alarms, indicated in Tech requirements and on P & ID, Appendix 1	\$14,000.00	\$28,000.00
73	1	LS	Differential Pressure Transmitters, and pressure transmitters, heat traced and mounted in O'Brien instrument enclosures All transmitter tubing shall be heat traced	\$150,000.00	\$150,000.00
<b>Subtotal</b>					<b>\$ 6,662,100</b>
<b>Contingency</b> 30%					<b>\$ 1,998,630</b>
<b>Bond</b>					<b>\$ 75,000.00</b>
<b>PER ADENDUM #5: OPTIONAL COST FOR ALTERNATE VFD MANUFACTURERS. BASE BID HAS EATON VFDS</b>					
ALLEN BRADLEY				\$ 200,000.00	
SQUARE D				\$ 52,000.00	
SIEMENS				\$ 103,000.00	

**THERE IS NO PRICING DIFFERENCE BETWEEN AFE OR PWS VFD'S**

Proposal; and Proposer has not sought by collusion to obtain for itself any advantage over any other Proposer or over Owner.

P-4 CONTRACT PRICE

4.01 Proposer will complete the Work in accordance with the Contract Documents for the following price(s):

A. COST OF THE WORK

1. The Cost of all Work other than Unit Price Work shall be determined as provided in Paragraph 10.01 of the General Conditions, as revised or amended by the Supplementary Conditions and shall include the following amounts subject to increases or decreases for changes in Work as provided for in Article 8 of the Agreement

2. Lump Sum Fees

- a. Design Professional Services - Preliminary Design up to and Including Issuing of the Design Memorandum.

\$ 350,000

- b. Design Professional Services – Preliminary Design Completion through Final Design Phases.

\$ 400,000

- c. Design Professional Services – Construction/Operational Phase

\$ 100,000

- d. Pre-Construction Services during Design Phase

\$ 75,000

- e. **Total construction costs: includes Bid Form, Construction Supervision and Superintendence.**

\$ 5,737,100

- f. Cost of Bond Premiums (Based on construction estimate):

\$ 75,000

Premium unit Price \$ 1 /\$ 100

Range: \$ 5,000,000 to \$ 25,000,000

TOTAL LUMP SUM (a. + b. + c. + d. + e. + f.):

\$ 6,737,100



B. DESIGN/BUILDER's FEE

1. Lump Sum Fee \$ INCLUDED

P-5 CONTRACT TIMES

5.01 Proposer agrees that the Work will be substantially completed and ready for final payment in accordance with paragraphs 13.05 and 13.08 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

Design Memo Completion: 21 days

(Insert days from Notice of Award to completion of the Design Memorandum)

Final Design Phase Completion: 287 days

(Insert days from Notice to Award to completion of the Final Design Phase)

5.02 Proposer accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified in the Agreement.

P-6 EXHIBITS

6.01 The following documents are attached to and made a condition of this Proposal:

A. The individual or entity providing the Design Professional Services will be:  
(if more than one list all)

Valentine Environmental Engineers

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

B. Listed below are the Exhibits the Design/Builder has attached to this proposal:

SEE ATTACHED APPENDIX

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# EXHIBIT B

**TECHNICAL SPECIFICATIONS  
TABLE OF CONTENTS**

---

**DIVISION 16 - ELECTRICAL**

16010	Electrical General
16110	Conduit Raceways
16120	Wire and Termination
16170	Grounding
16190	Supporting Devices
16415	Transfer Switches
16420	Service Metering Panel
16440	Miscellaneous Electrical Devices
16484	Variable Frequency Drives
16920	Electrical Acceptance Testing

Equipment Description	Manufacturers
LV Power Distribution Equipment – (Swgr, Swbds, Panelboards, Circuit Breakers, etc)	Cutler-Hammer Square D ABB Siemens General Electric
Transformers – Dry Type, VPI, VPE Insulation	Cutler-Hammer Square D/Sorgel Siemens ABB
Transformers – Cast-Coil	Square D/Sorgel ABB
Transformers – Liquid-Filled	<i>Not Preferred Equipment</i>
Protection Relays & Monitoring Relays for Voltage, Current, Phase Loss, Etc.	SEL (Schweitzer Engineering Laboratories) <i>Other acceptable manufacturers may include the following (subject to prior approval by AW Engr / Owner) All to be provided with Fiber-Optic Communications over Ethernet / Modbus TCP/IP</i>
Power Quality Metering, Motor Monitoring & Feeder Protection Relays	SEL 735, SEL 710, SEL 751A, SEL-489 <i>Other SEL devices as applicable for the design of the power distribution system.</i> <i>Communications to utilize fiber-optic interface; dual-port for loop configuration where available. Copper communications to be utilized only where specifically indicated. All to be provided with Fiber-Optic Communications capability Ethernet / Modbus TCP/IP and DNP3</i>
Low Voltage Motor Control Centers	Cutler-Hammer Square D ABB Siemens General Electric
Full Voltage Motor Starters	Cutler-Hammer Square D ABB Siemens General Electric
Reduced Voltage (Solid-State, Soft Start) Motor Starters	Cutler-Hammer Square D ABB Siemens General Electric Danfoss Benshaw

Equipment Description	Manufacturers
<p>Low Voltage Variable Frequency Drives – Stand Alone Applications (Free-Standing or Wall Mounted Units)</p> <p><i>NOTE: Basic Criteria - All VFD equipment to be "Heavy Duty" / "Industrial Duty", rated for 50 C. and suitable for full load rating with 3% voltage unbalance. Cooling fans shall be accessible without requiring total dismantling of the drive assembly; top outlet discharge preferred.</i></p> <p><i>"HVAC Rated" Drives are Not Permitted</i></p> <p><i>** NEMA4X Note: Drive assembly to be rated NEMA 4x by manufacturer; use of open chassis or NEMA 1 drives installed in NEMA 4x enclosure is not suitable in meeting this criteria.</i></p>	<p><u>Free-Standing – Wall or Floor Mounted</u></p> <p>Square D Cutler-Hammer Allen Bradley Toshiba ABB Siemens/Robicon Danfoss Benshaw Yaskawa</p> <p><u>NEMA 4X Type (where required)**</u></p> <p>Allen Bradley Yaskawa T B Woods Others as determined suitable for the application</p> <p>Harmonic Filters (where required) TCI Mirrus MTE</p>
<p>Low Voltage Variable Frequency Drives – Part of MCC Lineup/Equipment (Not an AW preferred method)</p>	<p>Cutler-Hammer Square D ABB Seimens General Electric</p>
<p>Low Voltage Automatic or Manual Transfer "Switches" – Contactor Type assembly</p>	<p>ASCO 4000 Series (unless otherwise suitable) Other potential Suppliers include: Cutler-Hammer GE/Zenith Russelectric</p>
<p>Low Voltage (<i>Service Entrance Rated where applicable</i>) Automatic Transfer Equipment (Circuit Breaker Transfer Equipment – Manual or Automatic) <i>NOTE: Circuit Breaker – Main and Circuit Breaker – Standby (where identified) REQUIRED unless specifically accepted otherwise</i></p>	<p>Cutler-Hammer/Eaton Square D ASCO 4000 Series Russelectric Switchgear General Electric</p>
<p>Uninterrupted Power Supplies</p>	<p>APC Powerware General Electric Mesta Liebert MCG</p>

Equipment Description	Manufacturers
<p>Surge Protective Devices (UL-1449, Rev 4 Compliant and <b>Listed/Labeled</b>)  <i>Note: use of integral SPD with panelboards and equipment not permitted; provide stand-alone external devices only unless otherwise specifically approved</i></p>	<p>APT – Advanced Protection Technologies "XDS" Series  MCG  Cutler-Hammer "SPD" Series</p>
<p>NOTE: The following descriptions provide general guidelines for lighting fixtures and applications.</p> <p>As LED technology continues to be available at lower costs, American Water recommends evaluation between LED and Fluorescent lamps/fixtures.  Where fluorescent fixtures are used (T-5 and T-8 fluorescent lamps), provide Programmed / Rapid-Start Ballasts. <i>(note- the use of Instant-Start ballasts is prohibited)</i></p> <p>The use of LED technology is recommended for all exterior applications unless special aesthetic and/or other site-specific criteria is established by the Owner or Regulatory Authority</p>	
<p>Lighting Fixtures – Fluorescent T-8 lamps, Program-Start Ballasts, Indoor Enclosed and Gasketed Fluorescent for Damp and Wet Locations (Process and Chemical Rooms)</p>	<p>EPCO GFF Series w/SS Latches, Simkar EN 2 or 3 w/SS Latches, Holophane ERS Series, Lithonia FSW or FHE Series, ILS  Others as accepted by Owner  <i>(Note – the use of fixtures similar to Lithonia DMR Series, Columbia LUN Series, Simkar OV450, etc are generally prohibited due to on-going physical / performance issues associated with this type of design (limited latches retaining sealed integrity of the assembly) ). Fixture selection is to take into consideration lamp output, lumen maintenance, and environmental factors associated maintainability of the overall system.</i></p>
<p>Lighting Fixtures – Fluorescent T-8 lamps, Program-Start Ballasts, Indoor dry applications</p>	<p>Benjamin, Philips,  Keene, Lithonia and  Others as accepted by Owner</p>
<p>Lighting Fixtures – Fluorescent T-8 lamps, Program-Start Ballasts, Indoor Hazardous Locations</p>	<p>Appleton  Crouse-Hinds  Killark  Others as accepted by Owner</p>
<p>Lighting Fixtures – LED Indoor</p>	<p>Lithonia  Philips  Cree  Others as accepted by Owner</p>
<p>All LED luminaires must be UL Listed (e.g. UL8753 / UL8750) and tested to IESNA LM-79 and LM-80 standards and that the results of those tests must be submitted to the Owner as part of the submittal review process. LED fixtures to be provided with a minimum 5 year warranty covering the driver, the LED components and the luminaire.</p>	
<p>Lighting Fixtures – LED Outdoor</p>	<p>RAB  Cree  Philips  Dialight  Lithonia  Others as accepted by Owner</p>
<p>Lighting Fixtures – HPS Outdoor</p>	<p>Holophane, Infranor  Devine, Philips  Others as accepted by Owner</p>

Equipment Description	Manufacturers
Lighting Control - Occupancy Sensors	Sensor Switch (High Humidity / Low Temperature Type) – process & chem. Areas Leviton, Hubbell, P&S along with others mfgs and products to be provided as determined suitable for the location and environment where installed. <i>NOTE: Technology (passive IR, ultrasonic, or dual) to be based on location where installed.</i>
Lighting Control – Daylight Harvesting and/or Special Function and Dimming	Lutron Wattstopper Day Light Controls Others as accepted by Owner
Control and Timing Relays ("Ice-cube" relay style)	Diversified Potter Brumfield Syrelec Allen Bradley Square D Cutler-Hammer Seimens Relco Others as accepted by Owner
Push Buttons, Selector Switches & Pilot Lights (30 mm minimum size devices, NEMA 4X style preferred and high-intensity LED pilot lamps)	Cutler-Hammer Square D Seimens Allen Bradley Kraus & Naimer
Definite Purpose Relays and Contactors	Cutler Hammer Square D Siemens Allen Bradley
PVC Coated Rigid Steel Conduit	Ocal Robroy
Fiberglass Conduit	Champion FRE
Power Generation Equipment – (Diesel engine driven units)	Onan/Cummins Caterpillar Kohler Others only as determined accepted by Owner
Industrial and Corrosion Resistant Wiring Devices	Cooper Industries Legrand Leviton Hubbell Meltric Woodhead, <a href="http://www.woodheadsales.com">http://www.woodheadsales.com</a>

- 3.4 *Power Supplies:* Separate power supplies shall be provided for analog inputs and PLC's, and digital outputs.
- 3.5 *Conduit Spacing:* Required between power and signal / control cables as listed in the I.E.E Standard 518-1982, current edition.
- 3.6 Signal/Control Wiring for Corrosive Areas
- A. *Ammonia:* Use Schedule 80 PVC conduit material for any new wiring required in these areas. Existing conduit and conductors should be reused wherever possible. Where possible, enclosures for control and electrical components should be located outside of the feed rooms. Where this is not possible, the enclosures shall be fiberglass NEMA 4X type enclosures.
- 3.7 *3 - Wire Control:* Required for all pieces of equipment (one normally open contact for start and one normally closed contact for stop). Chemical Metering pumps (require one contact for start and stop).
- 3.8 *Modulating Valves:* Analog control with full opened / full closed feedback or open / closed control with position feedback and full opened / full closed feedback.
- 3.9 Analog inputs and outputs shall be 4-20 mA. Discrete Inputs shall be 24 VDC. Isolated dry relay contacts shall be furnished for all Discrete Outputs – relays may be integral to the I/O module. Interposing relays may be furnished in cases where the I/O module relay contacts do not have adequate electrical ratings.
- 3.10 *Input / Output Modules:* Provide high density I/O modules.

#### PART 4 ACCEPTABLE MANUFACTURER'S LIST

##### SCADA / INSTRUMENTATION

Equipment Description	Manufacturers
Pressure Transmitter	Rosemount (Monterey) Endress Hauser
Turbidimeter	Hach
pH Analyzer	Hach Wallace & Tiernan ProMinent
Chlorine Residual Analyzer	Hach Wallace & Tiernan



	Prominent
Industrial Ethernet Switch	Hirschmann Stratix
Radio (Licensed and Un-Licensed) **(Not for New Install)	Microwave Data Systems (GE MDS)
Antenna (Radio) **(Not for New Install)	Clearwave Samco Andrew Decibel Pctel
Cellular Modem	Sierra Wireless (GX450)
Programmable Logic Controller	Allen Bradley (ControlLogix, CompactLogix L3 or Higher)
Fluoride Ion Monitor	ABB, ATI Orion ProMinent
Particle Counters/Monitor	Chemtrac Systems, Inc. Hach
Streaming Current Detector	Chemtrac Systems Inc.
Temperature / ORP Analyzer	Emerson ABB ProMinent
Flow Switch	Dwyer Instruments Inc. Flotect Kobold
Venturi Flowmeter	BIF Henry Pratt Primary Flow Signal Badger
Magnetic Flowmeter	ABB Rosemount Endress Hauser Sparling TigerMag (Monterey Preferred)
Displacement & Turbine Flowmeter	Sensus Technologies Neptune McCrometer
Ultrasonic Meter	Nusonics Division – Mesa Laboratories Polysonics Panametrics
Ultrasonic Level Probe	Endress Hauser Inventron Siemens Flowline Ametek – Drexelbrook
Radar Level Probe	Endress Hauser Ohmart-Vega

	Siemens Magnetrol
Capacitance Probe	Ametek - Drexelbrook Siemens
Float Level Switch	Siemens Anchor Scientific
Level Instruments – RF Admittance Probe	Ametek - Drexelbrook
Auto Dialer *Note: Not for New Installations	Raco Verbatim Antx
Ammonia Analyzer	Hach ChemScan
PLC Enclosure	Saginaw Control Engineering (SCE) Hoffman Engineering
Human Machine Interface (HMI) Software	ICONICS Gen32 GE Proficy iFix (Sacramento only)

## PART 5 SCADA HMI SCREEN AND SYSTEM REQUIREMENTS

5.1 SCADA HMI screen display must include but not limited to the following.

*(Set points include; alarm set points, level control set points, process parameters, and various control points.)*

### A. Well Sites

- a. Well level with alarm set points
- b. Well pump motor control and status
- c. Chemical analyzer and chemical feed system controls
- d. Discharge pressure and flow display with alarm set points
- e. Hydro pneumatic tank level and controls (if applicable)
- f. Blow valve status and control
- g. Totalizer values for flow, runtime and pump starts
- h. Well tuning set points
- i. Power monitor
- j. Trending graph of critical points

### B. Booster Pump Stations

- a. Pump motor controls and set point
- b. Source and discharge tank level display and set points (if applicable)
- c. Inlet and discharge pressure with set points
- d. Discharge flow and set points (if applicable)
- e. Discharge valve control and status
- f. Totalizer values for pump runtime and starts

# EXHIBIT C

**CALIFORNIA AMERICAN WATER  
ASR WELLS 5 AND 6 ABOVE GROUND FACILITIES**

**ASR WELL 5 DRAWING LIST  
VOLUME 2 OF 3**

<b>Sheet</b>	<b>Drawing</b>	<b>Description</b>
<b>General</b>		
1	G1	Cover Sheet, Vicinity Map and Sheet Index
2	G2	General Notes
3	G3	Abbreviations and Legend
<b>Civil</b>		
4	C1	Existing Site Plan
5	C2	Proposed Site Plan
6	C3	Paving and Grading Plan
7	C4	Frontage Enlarged Plan and Details
8	C5	Site Wall Elevations
9	C6	Site Wall Gate and Details
10	C7	Coordinate Plan
11	C8	Recharge/Recovery Pipe Plan and Profile to Connection Point in GJM
12	C9	Waste Pipe Plan and Profile to Connection Point in GJM
<b>Architectural</b>		
13	A1	Cover Sheet
14	A2	Architectural Site Plan
15	A3	Site Details
16	A4	Floor Plan and Schedules ASR-5
17	A5	Roof Plan ASR-5
18	A6	Exterior Elevations ASR-5
19	A7	Exterior Elevations ASR-5
20	A8	Building Sections
21	A9	Building Sections
22	A10	Building Sections
23	A11	Exterior Details
24	A12	Exterior Details
25	A13	Exterior Details
26	A14	Interior Details
27	A15	Interior Details
<b>Acoustical</b>		

28	AC1	Legend, Schedules and Notes
29	AC2	Sections and Details
30	AC3	Sections and Details
<b>Structural</b>		
31	S1	General Structural Notes
32	S2	Typical Details
33	S3	Typical Details
34	S4	Typical Details – Site Equipment Pads
35	S5	Foundation Plan
36	S6	Framing Plan
37	S7	Roof Framing Plan
38	S8	Foundation Details
39	S9	Foundation Details
40	S10	Steel Framing Details
41	S11	Steel Framing Details
42	S12	Steel Framing Details
43	S13	Miscellaneous Details
<b>Process Mechanical</b>		
44	M1	Process Flow Diagram
45	M2	Yard Piping Plan
46	M3	Well Equipping Enlarged Plan
47	M4	Well Equipping Sections
48	M5	Chlorination Feed System Enlarged Plan
49	M6	Chlorination Feed System Sections
50	M7	Details I (lubrication system, eyewash/shower, yard hydrant)
51	M8	Details II (injection quill, sample ports, pressure gauge, PIT)
52	M9	Details III (pipe supports, bollard)
53	M10	Details IV (well enclosure)
<b>Mechanical &amp; Plumbing</b>		
54	P1	Legend, Schedules and Notes
55	P2	Floor Plan ASR-5
56	P3	Details
57	P4	Details
<b>Instrumentation</b>		
58	I1	P&ID Symbols and Legend
59	I2	P&ID – Well No. 5
60	I3	P&ID – Chlorination - Well No. 5
<b>Electrical</b>		
61	E1	Notes, Symbols and Legend
62	E2	Single Line Diagram & Load Calcs – ASR-5

63	E3	Electrical Schedules – ASR-5
64	E4	Overall Power, Lighting and Grounding Plan – ASR-5
65	E5	Detail Power, Lighting and Grounding Plan – ASR-5
66	E6	Schematic/Connection Diagram – Well Pump Starter – ASR-5
67	E7	Schematic/Connection Diagram – RTU – ASR-5
68	E8	Schematic/Connection Diagram – Cl2 System & Misc. – ASR-5
69	E9	Conduit Block Diagram – ASR-5
70	E10	Electrical Details

**CALIFORNIA AMERICAN WATER  
ASR WELLS 5 AND 6 ABOVE GROUND FACILITIES**

**ASR WELL 6 DRAWING LIST  
VOLUME 3 OF 3**

<b>Sheet</b>	<b>Drawing</b>	<b>Description</b>
<b>General</b>		
1	G1	Cover Sheet, Vicinity Map and Sheet Index
2	G2	General Notes
3	G3	Abbreviations and Legend
<b>Civil</b>		
4	C1	Existing Site Plan
5	C2	Proposed Site Plan
6	C3	Paving and Grading Plan
7	C4	Frontage Enlarged Plan and Details
8	C5	Site Wall Elevations
9	C6	Site Wall Gate and Details
10	C7	Coordinate Plan
11	C8	Recharge/Recovery Pipe Plan and Profile to Connection Point in GJM
12	C9	Waste Pipe Plan and Profile to Connection Point in GJM
<b>Architectural</b>		
13	A1	Cover Sheet
14	A2	Architectural Site Plan
15	A3	Site Details
16	A4	Floor Plan and Schedules ASR-6
17	A5	Roof Plan ASR-6
18	A6	Exterior Elevations ASR-6
19	A7	Exterior Elevations ASR-6
20	A8	Building Sections
21	A9	Building Sections
22	A10	Building Sections
23	A11	Exterior Details
24	A12	Exterior Details
25	A13	Exterior Details
26	A14	Interior Details
27	A15	Interior Details
<b>Acoustical</b>		
28	AC1	Legend, Schedules and Notes

29	AC2	Sections and Details
30	AC3	Sections and Details
<b>Structural</b>		
31	S1	General Structural Notes
32	S2	Typical Details
33	S3	Typical Details
34	S4	Typical Details – Site Equipment Pads
35	S5	Foundation Plan
36	S6	Framing Plan
37	S7	Roof Framing Plan
38	S8	Foundation Details
39	S9	Foundation Details
40	S10	Steel Framing Details
41	S11	Steel Framing Details
42	S12	Steel Framing Details
43	S13	Miscellaneous Details
<b>Process Mechanical</b>		
44	M1	Process Flow Diagram
45	M2	Yard Piping Plan
46	M3	Well Equipping Enlarged Plan
47	M4	Well Equipping Sections
48	M5	Details I (lubrication system, eyewash/shower, yard hydrant)
49	M6	Details II (injection quill, sample ports, pressure gauge, PIT)
50	M7	Details III (pipe supports, bollard)
51	M8	Details IV (well enclosure)
<b>Mechanical &amp; Plumbing</b>		
52	P1	Legend, Schedules and Notes
53	P2	Floor Plan ASR-6
54	P3	Details
55	P4	Details
<b>Instrumentation</b>		
56	I1	P&ID Symbols and Legend
57	I2	P&ID – Well No. 6
<b>Electrical</b>		
58	E1	Notes, Symbols and Legend
59	E2	Single Line Diagram & Load Calcs – ASR-6
60	E3	Electrical Schedules – ASR-6
61	E4	Overall Power, Lighting and Grounding Plan – ASR-6
62	E5	Detail Power, Lighting and Grounding Plan – ASR-6
63	E6	Schematic/Connection Diagram – Well Pump Starter – ASR-6



64	E7	Schematic/Connection Diagram – RTU – ASR-6
65	E8	Schematic/Connection Diagram – CI2 System & Misc. – ASR-6
66	E9	Conduit Block Diagram – ASR-6
67	E10	Electrical Details

# EXHIBIT D

**CALIFORNIA AMERICAN WATER  
ASR WELLS 5 AND 6 ABOVE GROUND FACILITIES**

**TECHNICAL SPECIFICATIONS - DIVISIONS 1 THROUGH 17  
VOLUME 1 OF 3**

**TABLE OF CONTENTS**

<u>Section</u>	<u>Pages</u>
Division 1 – GENERAL REQUIREMENTS	
01010	Summary of Work.....01010-1
01040	Permits .....01040-1
01045	Cutting and Patching.....01045-1
01046	Connections to Existing Facilities .....01046-1
01050	Field Engineering.....01050-1
01103	Earthmoving and Dust Control .....01103-1
01143	Coordination with PROPERTY OWNER’S Operations .....01143-1
01300	Submittals .....01300-1
01340	Shop Drawing Procedures.....01340-1
01342	Installation Data .....01342-1
01410	Testing Laboratory Services .....01410-1
01420	Special Inspections.....01420-1
01453	Testing of Hydraulic Structures .....01453-1
01541	Protection of the Work and Property .....01541-1
01600	General Equipment Provisions .....01600-1
01610	Transportation and Handling of Materials and Equipment.....01610-1
01611	Storage of Materials and Equipment.....01611-1
01620	Installation of Equipment.....01620-1
01655	Starting and Placing Equipment in Operation .....01655-1
01660	Field Tests of Equipment .....01660-1
01710	Cleaning .....01710-1
01720	Record Documents.....01720-1
01730	Operation and Maintenance Data.....01730-1
01731	Instruction of Operations and Maintenance Personnel .....01731-1
01750	Spare Parts and Maintenance Materials .....01750-1
01810	Commissioning .....01810-1

## TABLE OF CONTENTS

<u>Section</u>	<u>Pages</u>
Division 2 – SITE WORK	
02200 Earthwork.....	02200-1
02210 Trenching, Backfilling and Compaction.....	02210-1
02540 Erosion and Sedimentation Control.....	02540-1
02558 Identification/Location Guide.....	02558-1
02610 Pavement and Markings.....	02610-1
02614 Concrete Curbs, Drives and Sidewalks.....	02614-1
02643 Waterline Testing and Disinfection.....	02643-1
02649 Chain Link Fences and Gates.....	02649-1
Division 3 – CONCRETE	
03100 Concrete Formwork.....	03100-1
03200 Concrete Reinforcement.....	03200-1
03251 Concrete Joints.....	03251-1
03300 Cast-In-Place Concrete.....	03300-1
03600 Grout.....	03600-1
Division 4 – MASONRY	
04065 Masonry Mortar and Grout.....	04065-1
04820 Reinforced Unit Masonry Assemblies.....	04820-1
Division 5 – METALS	
05051 Anchor Bolts, Adhesive Anchors and Concrete Inserts.....	05051-1
05120 Structural Steel.....	05120-1
05501 Miscellaneous Metal Fabrications.....	05501-1
05532 Aluminum Grating and Checker Plate.....	05532-1
Division 6 – WOOD AND PLASTICS	
06105 Miscellaneous Rough Carpentry.....	06105-1
06610 Fiberglass Reinforced Plastic Grating and Support Framing.....	06610-1
Division 7 – THERMAL AND MOISTURE PROTECTION	
07321 Clay Roof Tiles.....	07321-1
07541 Polyvinyl-Chloride (PVC) Roofing.....	07541-1
07620 Sheet Metal Flashing and Trim.....	07620-1
07720 Roof Accessories.....	07720-1
07920 Joint Sealants.....	07920-1

**TABLE OF CONTENTS**

<u>Section</u>	<u>Pages</u>
Division 8 – DOORS AND WINDOWS	
08113 Hollow Metal Doors and Frames .....	08113-1
08710 Door Hardware.....	08710-1
Division 9 – FINISHES	
09240 Portland Cement Plastering.....	09240-1
09900 Painting .....	09900-1
Division 10 – SPECIALTIES	
10210 Wall Louvers.....	10210-1
10400 Identification Devices .....	10400-1
10523 Fire Extinguishers and Cabinets .....	10523-1
Division 11 – EQUIPMENT	
11000 Vertical Induction Motors.....	11000-1
11200 Deep Well Vertical Turbine Line-Shaft Well Pumping System.....	11200-1
11201 Equipment Tags .....	11201-1
11240 Chemical Feed System.....	11240-1
11250 Noise Enclosure .....	11250-1
Division 12 – FURNISHINGS (Not Used)	
Division 13 – SPECIAL CONSTRUCTION (Not Used)	
13100 Polyethylene Upright Double Wall Storage Tanks.....	13100-1
Division 14 – CONVEYING SYSTEMS (Not Used)	
Division 15 – MECHANICAL	
15050 Mechanical General Requirements .....	15050-1
15051 Buried Piping Installation .....	15051-1
15052 Exposed Piping Installation .....	15052-1
15058 Combination Rate of Flow and Pressure Reducing Valve.....	15058-1
15061 Ductile-Iron Pipe.....	15061-1
15065 Copper Pipe.....	15065-1
15067 Thermoplastic Pipe .....	15067-1
15101 Gate Valves, Operators and Appurtenances .....	15101-1

## TABLE OF CONTENTS

<u>Section</u>		<u>Pages</u>
15102	Steel Pipe .....	15102-1
15103	Butterfly Valves, Operators and Appurtenances .....	15103-1
15116	Check Valves and Appurtenances .....	15116-1
15125	Ball Valves, Operators and Appurtenances .....	15125-1
15150	Specialty Valves and Appurtenances.....	15150-1
15212	Piping Specialties and Accessories.....	15212-1
15220	Pipe Hangers and Supports .....	15220-1
15240	Clean Agent Fire Suppression Systems .....	15240-1
15250	Mechanical Insulation.....	15250-1
15800	Heating, Ventilating and Air Conditioning.....	15800-1

### Division 16 – ELECTRICAL

16000	General Electrical Requirements .....	16000-1
16010	General Electrical.....	16010-1
16050	Basic Materials and Methods.....	16060-1
16111	Conduits .....	16111-1
16123	600 Volt Class Cable .....	16123-1
16124	Instrumentation Class Cable .....	16124-1
16130	Outlet, Pull, and Junction Boxes.....	16130-1
16141	Wiring Devices .....	16140-1
16142	Weatherproof While In Use Outlet Enclosures .....	16142-1
16160	Enclosures .....	16160-1
16161	Control Panels.....	16161-1
16170	Grounding .....	16170-1
16190	Supporting Devices.....	16190-1
16195	Electrical Identification.....	16195-1
16420	Service Entrance Section .....	16420-1
16430	Customer Power Metering System .....	16430-1
16475	Mini Power Centers .....	16130-1
16476	Low Voltage Circuit Breakers .....	16476-1
16477	600 V Fuses.....	16477-1
16500	Lighting.....	16500-1
16505	Transient Voltage Surge Protection System (SPD) .....	16505-1
16902	Electrical Control Devices .....	16902-1
16904	Variable Frequency Drives – Low Voltage .....	16904-1
16906	PLC and Remote IO Cabinets.....	16906-1
16920	Electrical Acceptance Testing.....	16920-1

### Division 17 – INSTRUMENTATION

17000	Instrumentation .....	17000-1
17120	Pressure Transmitters.....	17120-1
17121	Pressure Switches.....	17121-1

**TABLE OF CONTENTS**

<u>Section</u>	<u>Pages</u>
Division 17 – INSTRUMENTATION (continued)	
17124 Submersible Level Transmitter.....	17124-1
17136 Direct Drive Propeller Flowmeter .....	17136-1
17137 Magnetic Flowmeters.....	17137-1
17150 Limit and Position Switches .....	17150-1

++END OF TABLE OF CONTENTS++

# EXHIBIT E



### III. SCOPE OF DESIGN SERVICES

#### A. Design Professional Services- Preliminary and Final Design

Design Professional Services shall include the work described in General Conditions 6.01 as amended by the Supplementary Conditions and work described in this Scope of Design Services including all listed Attachments.

Review of the design will be performed by American Water engineering personnel. Any changes in the scope of services during the design phase must be addressed by the Design/Builder before the work is performed. Changes will be made in accordance with Articles 3 and 11 of the General Conditions.

1. Preparation of a brief critique of the design concepts to determine what modifications to the concepts may result in a more cost effective project, simplified construction, and/or improved operating procedures. This document shall be submitted prior to the initial design meeting.
2. Attendance at periodic meetings with the Owner at their site located in **Pacific Grove, CA**. At least ten (10) working days shall be allotted in the schedule for review of information by Owner prior to any meeting. It is expected several one-day meetings (unless otherwise noted) will be required during the design phase including:
  1. An initial conference (this will include review of the design critique and alternative concepts and be coupled with a one day partnering meeting mentioned below and in Supplementary Conditions SC-2.05 Initial Conference),
  2. Two meetings to review the instrumentation requirements (these will be coupled with the 30% and 60% design review meetings),
  3. Meetings to review the progressive completion at (15%, 30%, 60%, 90%, and 100%) of design drawings and specifications and to prepare for permit submittals. The draft Design Memorandum will be submitted for review prior to the 15% meeting. The final Design Memorandum and preliminary drawings will be reviewed at the 30% meeting.

The Design Builder is responsible for preparing notes summarizing the discussions and the conclusions from the meetings and distributing the notes within 7 days following the meeting.

The preliminary design phase will be considered complete at the 60% completion of design and upon Owner's approval of the construction cost estimate.

3. All land survey work as necessary to adequately complete the design and file permit applications and provide reference points for construction layouts. As a minimum, property lines, topographic information and location of existing structures are to be included.
4. All geotechnical investigations including soil borings, rock cores, and auger probing as necessary to adequately complete the design and estimate and plan construction earthwork.



5. All environmental activities as necessary to adequately complete the design and file permit applications.
6. Total interaction with all utility companies to design and specify proper service for the proposed improvements and to coordinate the relocation of existing utilities as required. The Design/Builder shall also determine if any additional capital or usage fees will be imposed by any specific utility.
7. Determine which Local, State, and Federal permits are required for the facility, prepare the necessary applications, and provide technical input as required in securing these permits. The Design/Builder shall also provide Owner with information regarding the approximate length of review time for each permit, and any special requirements that could delay this process (e.g., public hearings). When required by the permitting agency, the permit applications will be formally submitted by Owner.
8. Preparation of a preliminary budget construction cost estimate broken down by major work item, and a detailed construction cost estimate breakdown: (labor, materials, equipment, subcontract, temporary construction etc.) organized by Construction Specifications Institute (CSI) division and major process components. The preliminary estimate is to be submitted with the Design Memorandum. The detailed construction estimate is to be submitted in accordance with the Supplementary Conditions SC-6.01 Design Professional Services.
9. Preparation and maintenance of a Design Memorandum. The Design Memorandum is a summary of design data presented in outline format along with other pertinent project information. The primary intent of the memorandum is to allow Owner to review and comment on the design before the Design/Builder proceeds with detailed design and drafting. The memorandum shall be updated throughout the design and submitted to the Owner with each set of updated drawings. A summary of the information to be included in the memorandum is outlined in the Attachments. After completion of the draft Design Memorandum a meeting (15% completion) will be held with all parties. The purpose of the meeting will be to review the Design/Builder's Design Memorandum to determine and evaluate alternative concepts to reduce capital and operating costs and/or to improve operations. The Design Memorandum will be modified with the results of this evaluation by the Design/Builder.
10. Preparation of a narrative description of the operation of the proposed facilities to be used by plant operations personnel to familiarize themselves with the operation, capabilities, and limitations of the proposed improvements. The narrative shall be an extension of the process sections from the Design Memorandum, but in text format. It shall explain the intent and function of each unit process in addition to the system as a whole, and it shall include the detailed written control strategies (functional descriptions), which were prepared for the Design Memorandum submission. Preparation of the narrative shall not begin until the Design Memorandum is finalized and accepted. The narrative shall be submitted as a separate document for review at the final design review meeting. It shall serve as the foundation of the Operations and Maintenance Manual discussed in the Construction/Operation Phase section of this document.



11. Preparation of a complete and coordinated set of design drawings for all engineering disciplines with an adequate level of detail to allow for review/approval by permitting agencies and construction by the Design/Builder. Drawings used for permit applications and bidding require the signature and seal of a licensed professional engineer in the State of California. The drawing sets require segregation by major discipline: site, architectural, structural, mechanical, electrical, instrumentation, etc. Drawings shall not contain extensive notes and written instructions that are more appropriate for the specifications. Standard detail drawings shall exclude items that are not applicable to the current project.

The Design/Builder shall prepare all drawings using the most current version of AutoCAD for Windows. The Owner will not accept drawings created in an alternative CAD program, such as MicroStation, and "converted" to AutoCAD format. The Design/Builder shall use only AutoCAD and AutoLISP routines and no vendor-furnished or third party programs.

***PLEASE REFER TO AMERICAN WATER DRAWING STANDARDS AND SAMPLES.***

It is recommended that the Design/Builder submit an early review (e.g., 15 percent complete) set of .dwg files for this project. The Owner shall review the .dwg files for conformity with the Owner's AutoCAD standards and advise the Design/Builder of any necessary changes. The Owner then shall assume that the Design/Builder completes the remainder of the design in conformity with the Owner's AutoCAD standards. If it is later found that final documents do not conform, the Design/Builder shall revise the final .dwg files at the Design/Builder's cost. The Design/Builder shall have the opportunity to discuss the Owner's AutoCAD standards with Company staff.

Standards developed by the Owner, and applicable to this project, and selected drawings of the existing facilities are provided in the Attachments. The information provided in the record drawings may not represent actual field conditions. The Design/Builder has the responsibility to field verify and record the existing conditions as necessary to complete the design phase.

Electrical drafting symbols shall conform to IEEE Standard 315 and 315A. Specific requirements for the design of instrumentation and controls for water treatment processes or water distribution, where applicable, are:

- a. Conduct on-site investigations, interface with process engineers/designers, and review design materials and drawings to determine the type and location of primary sensors, control devices, panels and related instruments, and control equipment. The locations, elevations, and mounting details for these devices shall be included on the drawings.
- b. Prepare P&ID drawings in accordance with ISA Standard S5.1 and Remote Terminal Unit (RTU) Interconnection drawings (input/output point lists) from the P&IDs. Example RTU Interconnection drawing and an electronic template will be provided to the selected Design/Builder upon request. The RTU interconnection drawings must be sufficiently detailed and accurate such that they can be utilized by the System Integrators and provided back to the Owner as record drawings. The Design/Builder is responsible for allowing each of the pre qualified System



Integrators identified by the Owner to review the RTU Interconnection drawings prior to the final design review meeting. The minimum information to be included on the RTU Interconnection drawings is as follows:

- Wiring from field instruments to the appropriate I/O point on the RTU.
  - All signal isolation and signal conditioning equipment as required (e.g., a current to current isolator).
  - Connections associated with the communications between RTUs (radios, fiber optic modems, etc.).
  - Contacts and coils on digital outputs.
  - Wiring tags showing the RTU number, I/O type (AI, AO, DI, DO), RTU card number, and I/O point number.
  - Connections for DC power supplies.
- c. Prepare ladder logic diagrams to show the hard wired logic in panels and motor control logic in PLCs. Drawings shall be prepared to show the general configuration of all new panels, consoles, and the wiring between interconnected hardware components.
- d. Prepare conduit and wiring drawings showing conduit and signal wire routing using scaled base drawings of all facilities. Where appropriate, the conduit and wiring drawings shall be integrated into the electrical drawings.
12. Preparation of technical specifications, Divisions 2 through 16 in the CSI Spec-Text format, and the list of required shop drawings, in final electronic form for printing, copying, and binding by the Design/Builder. Specifications shall reflect only the scope of work for the current project. Standard specifications shall be modified to exclude items not applicable to the current project.

Specifications shall be prepared using the most current version of the Microsoft Word for Windows word processor. If your standard specifications are in a format other than Microsoft Word, they must first be converted to Microsoft Word format, thoroughly checked to ensure that a complete conversion was accomplished (including all tables, charts, headers, footers, etc.), then edited for this project as appropriate within Microsoft Word. The text shall be 11 point Arial font. An electronic file name for each specification section shall include a descriptive name preceding a 5-digit specification section number followed by the Microsoft Word file extension (e.g., PROJECT 11500.doc).

The American Water System Construction Contract Documents prohibit a Design/Builder from submitting substitute or "or equal" materials or equipment when a proprietary product, named manufacturer, or supplier has been specified. Provisions exist for bidders to submit alternatives to these items at bid time only. To ensure competitive pricing is being obtained for material and equipment that is not necessary to be a sole source item, it is recommended that at least three (3) acceptable manufacturers or products be listed in the specifications for each of these items. Specifying less than three (3) manufacturers is acceptable only when approved by the Owner in cases where the products of additional manufacturers are not deemed to be comparable or do not meet the project requirements. If design details have been used on the drawings that are based on one of the listed products,



this should be noted in the specifications. If design revisions are necessary to accommodate the other acceptable products, additional details shall be provided for the other products to facilitate complete and accurate bidding. Where an item is to be furnished on a sole source basis, only one (1) acceptable manufacturer or product will be listed in the specifications. If common items are included in multiple specification sections, language is to be included in the specifications that the same manufacturer is to be used for these common products.

In general one of the two specification methods above shall be used for all process, mechanical, and electrical equipment and other materials that are unique to the design (e.g., certain piping, valve, structural, mechanical, electrical and architectural products). Specifications for other materials or products that can be written prescriptively, by performance, or by reference to applicable standards, do not need to include specific manufacturers or products unless desired by the Design/Builder or the Owner.

The specific items and requirements of the specifications for the electrical control circuits and the instrumentation and controls for water processes or water distribution, where applicable, are listed below. The Design/Builder shall interface closely with the Owner in the development of these items.

- a. Specifications for the digital equipment, and field and panel mounted instruments. Communication protocol between control system equipment and other digital equipment shall be specified by the Design/Builder and verified that it is compatible with the DCS. Data to be transferred by serial communications with other digital equipment shall also be identified.
- b. An input/output point list.
- c. Instrument specification sheets that are in accordance with ISA Standard S20.
- d. Detailed written control logic and strategies (functional descriptions). Identification of the initial set points to be used at startup when variable set points are required in the control strategy shall also be identified.
- e. Graphic display descriptions. Each specific display shall be identified and a brief description provided. Each I/O point (or calculated value) that should appear on each display must also be identified (preferably by indicating the name or number of the display directly on the I/O list). Sample displays, which will be provided by the Owner, shall be included in the contract documents.
- f. Report definitions. All typical reports that the Owner will generate shall be integrated with the control system and be accessible via an electronic spreadsheet (Microsoft Excel) or electronic database (Microsoft Access). The Owner will provide examples of each specific report that shall be provided in the specifications. The I/O point or tag number that corresponds to each entry space in each report shall be identified directly on the example reports with appropriate instructions such as whether the data is an average, taken at a specific time of the day, etc. Entry spaces that the system cannot accommodate and need to be filled in manually shall be identified as such.



- g. Alarming strategies for all alarms conditions including both warning alarms and critical alarms. Warning alarms are defined as analog (or calculated) alarms that provide notification that a critical condition is being approached (e.g. high turbidity, low chlorine residual, etc.). Critical alarms initiate automatic action by the system to address a critical condition (e.g. shut down the facility, start a backup piece of equipment, etc.). The specific action associated with each critical alarm shall also be identified. The Design/Builder shall identify all initial alarm set points to be used at startup.
  - h. Structured Query Language (SQL) database definition. All analog values, integrated values, and other relevant historical data shall be identified by the Design/Builder for inclusion in the SQL database and trending by the Systems Integrator. The Integrator shall store all historical data in a Microsoft SQL Server format.
  - i. Narrative descriptions of all pump control circuits (pump starters for example). These descriptions shall describe in detail the operation of these circuits in the various operating modes (manual, auto, remote, etc.) and shall provide information relating to the purpose of each device (relays, timers, lights, etc.) included in the circuit.
13. Provide a total of ten (10) sets of design memoranda, drawings, and specifications to be used during the design period for review purposes prior to each meeting. This same distribution of final drawings and specifications along with all final design information shall be made at the completion of design. Where possible, this information shall be submitted in electronic format. The information shall include all design notes and calculations, the design memorandum, drawings, and specifications. Electronic information, submitted at the end of (or during) the project, shall be on electronic media acceptable to Owner. Provide one set of full-size plans at the completion of final design phase, along with an electronic PDF format set.
14. Performance of a constructability and Value Engineering review by the Design/Builder with participation of Owner. Review each element of construction work with consideration given to feasible methods of construction, constraints to construction (materials, labor, specially construction, weather, plant operations, other, etc.), design details, time required to complete each element of work, and possible alternatives which would reduce costs.

## **B. Pre-Construction Services**

Pre-Construction Services shall include but not be limited to the following:

1. Make arrangements, schedule, chair and take minutes for all meetings during the design phase portion of the project.
2. Preparation and maintenance of a progress schedule throughout the duration of the design and construction phases is required. The schedule requirements are described in the General Conditions and Section 1300 of the Specifications. The initial schedule for this project must focus on completing work necessary to file the



necessary permit applications and procurement of necessary equipment and materials to meet the Contract Times.

3. Preparation and agreement of the Target Cost of Construction. The Target Cost is to be mutually agreed between the Owner and Design/Builder on an open book basis (with costs established upon the principles of Cost of Work under paragraphs 10.01 to 10.03 of the General Conditions) during the course of the design development. Upon reaching stated percentage completion of the design, including reconciliation of Owner's comments, the Design/Builder shall prepare and present the Target Cost for Owner's agreement.

Target Cost Development:

General: As a minimum, the Target Cost shall be prepared and presented in general conformance with the Sixteen (16) Division Format of the Construction Specifications Institute (CSI) and/or by Area of Work as defined in the Estimated Cost of Construction template form; the final content and format is to be agreed with the Owner. Full description of the Target Cost arrangement is provided in the Supplementary Conditions and the Agreement.

A minimum of three (3) quotations or proposal from Owner-approved suppliers, vendors, manufacturers, subcontractors, etc. shall be obtained to set the target cost for all equipment, materials, products, and subcontracted labor and services. Receiving less than three (3) quotations or proposals is acceptable when approved by the Owner or in cases where the products or services of additional or other suppliers, vendors, manufacturers, subcontractors, etc. are not deemed to be comparable or do not meet the project requirements. The lowest responsive quotation or proposal shall be used to set the cost unless approved by the Owner. The cost for self performed work shall be agreed upon pursuant to SC 10.01. An amount for the Design/Builder's risk/contingency may be included as set forth in the Agreement.

The Design/Builder shall submit the Target Cost to Owner and include a cover letter detailing the basis of the Target Cost, CSI and/or Work Area estimates and all supporting documentation that shall be clearly listed, labeled and itemized.

Target Cost shall be developed as follows:

- A. Preliminary Target Cost shall be developed at the 30% design completion stage. Quotations and proposals shall be based on and reference the 30% design documents and shall be specific to model, size, material, etc. as applicable. "Budgetary" quotations or proposals may be used to develop costs if the design of that item or discipline has not progressed to the point where more specific quotations or proposal can be furnished.
- B. The Target Cost shall be developed upon completion of the 60% design, including incorporation of Owner's comments. Quotations and proposals shall be based on and reference the 60% design documents and shall be specific to model, size, material, etc. as applicable. The quotations and proposals shall be accurate, complete and remain valid for a minimum of 60 days and be ready for execution by the Design/Builder. "Budgetary" quotations or



proposals may not be used to develop the Target Cost unless approved by the Owner. In such instances, the budgetary quotation may be used as a "place-holder" to assist in setting the Target Cost at the discretion of the Owner and will be subject to revision once appropriate quotations or proposal can be obtained.

4. Preparation of a detailed construction sequence and logistics plan describing how the proposed facilities will be constructed and placed in-service while keeping existing facilities in-service as necessary. The plan shall consider seasonal limitations and shall specifically define all partial or full outages (including electrical) with estimated time for each outage as well as details on proposed time of day (i.e. regular working hours or evening/weekend hours), proposed time of year (i.e. during peak or off-peak demand seasons) and any special precautions, actions, temporary facilities, etc, that shall be required to safely complete each outage. The plan must be reviewed and approved by Owner to ensure that operations of any existing facilities will be properly maintained during construction. The plans are to show, at a minimum, the scheduled completion of construction on a calendar quarterly basis. Cost associated with keeping the plant on-line as a result of this plan shall be included in the Cost of Construction. As a consequence, the detailed construction sequence and logistics plan must be completed as part of the 60% design.
5. Provide constructability reviews at the 15%, 30%, 60%, and 90% of the design development phase. Review each element of construction work with consideration given to feasible methods of construction, constraints to construction (materials, labor, specialty construction, weather, plant operations, etc.) design details, time required to complete each element of work, and possible alternatives which would reduce costs, and maintain the level of quality expected by the Owner.

The reviews shall include the appropriate designers, the Owner, and subcontractors if required as participants.

Include providing the net cost and or time savings associated with each suggested change or modification to the design. Maintain a log tracking each suggestion with the results pertaining to cost and or time savings and acceptance/partial acceptance/rejection.

6. Performance of a bidability review with participation of Owner. Review the breakdown of the work into bid packages that will yield the most cost effective construction program with consideration given to the availability of qualified subcontractors and vendors. Develop interest in the project from prequalified subcontractors and vendors.
7. Maintain electronic communication capabilities throughout the design and construction phases of the project.

The Web browser that you utilize must be capable of handling file attachments, and your e-mail must be MIME (Multipurpose Internet Mail Extensions) compatible in order to send file attachments without the need to encode/decode. Additionally, all electronic data files (word processing documents, spreadsheets, etc.) created by American Water will be prepared using the **2010 version of Microsoft Office**, and the Consultant must have the ability to read these file formats. It is preferred, but not





mandatory, that the consultant also create all data files that may need to be shared via the Web or e-mail in Microsoft Office format.

8. Identify the permits that are required for construction phase of the project, and prepare the necessary applications, and secure these permits. Provide the Owner with information regarding the approximate length of review time for each permit, and any special requirements that could delay this process. Provide all information required for the permit application and submit the fees required. The Owner will reimburse the Design/Builder for all permit application and permit fees at their direct cost. Include but not limited to the Building Permit, electrical, etc. including wastewater discharge if required.

### **C. Design Professional Services – Construction/Operation Phase**

Design Professional Services-Construction/Operation Phase must include the following services:

1. Attendance at construction progress meetings, resolution of construction problems related to the design, and review and interpretation of the design.
2. Shop drawing review and approvals including review and approval of resubmittals, and maintenance of a shop drawing log indicating dates received, returned, and status.
3. Preparation of supplementary detailed working drawings, specifications, and written instructions or meetings as necessary throughout the construction period to interpret the contract plans and documents and to resolve changes brought about by actual field conditions encountered.
4. Provide the services of the I&C Staff Engineer or Subconsultant to witness the factory acceptance test (FAT) of the assembled I&C system prior to the system's shipment from the factory to the job site. The first goal is to ensure that the system has been assembled properly and is in proper working order. This will include testing of each individual I/O point and should be witnessed by the I&C Staff Engineer. The second goal is to simulate and test the control logic, and this portion of the FAT should be attended by the Design Project Manager/Engineer or someone familiar with the details of the process design and operation of the facility. Additionally, provide the services of the I&C Staff Engineer for site visits to review and inspect the instrumentation and wiring of field mounted instruments, resolution of problems, initial calibration and testing, and system start-up.
5. Provide the services of the Design Project Manager/Engineer who will participate in and observe each process and/or phase of initial operation of the project (start-up) and review operation and performance tests required by the contract specifications. At least five (5) days should be allotted for on-site start-up services and resolution of initial operating problems. Engineers from all of the engineering disciplines shall be made available to resolve start-up issues as required, and also to resolve problems which may arise during the construction period allow ten (10) site visits for these services.



6. Preparation and submittal of electronic record drawings within two (2) months after start-up. The record .dwg files shall conform to the Company's AutoCAD standards. If it is found that final documents do not conform to the Company's AutoCAD standards, the Consultant shall revise the final .dwg files at the Consultant's cost. Data, information, sketches and working drawings, to be incorporated with the record drawings, shall be provided by the Design/Builder. The record drawings shall include all above and below grade changes from the original design drawings for all engineering disciplines. Changes made to reflect the as-installed conditions shall be made in the same level of detail and to the same degree of drafting quality as the original design drawings. The I&C engineer must review record drawings prepared by the wiring contractors to verify their accuracy prior to substantial completion. Reference Division 1 of the specifications for additional information.
7. Provide four (4) copies of an operation and maintenance manual containing operating, maintenance, and repair information from manufacturer's submittals. The O&M manual shall also contain the final narrative description of the operation of the proposed facility, and a complete description of start-up and shut-down procedures. The O&M manual shall be bound in 3-ring binders and indexed with tabs according to major process designations in the order of the treatment process. Four (4) complete electronic copies of the final O&M manual shall also be provided on CD. An initial draft of the O&M manual, without manufacturer's data, shall be submitted for review at approximately the 50% point of construction completion. The complete O&M manual containing all manufacturer's data shall be submitted at the 95% point of construction completion but no later than one (1) month before scheduled start-up.
8. Provide the services of the Design Project Manager/Engineer for a one (1) day inspection of the facilities approximately twelve (12) months after they are placed into operation. The Design Project Manager/Engineer shall provide a written report summarizing warranty repairs that are necessary, as well as any operational modifications that are recommended to optimize performance.



# EXHIBIT F

Trade Classifications With Labor Rates	
Laborer	\$ 76.00
Laborer OT	\$ 101.00
Laborer DT	\$ 126.00
Operator	\$ 105.00
Operator OT	\$ 135.00
Operator DT	\$ 165.00
Teamster	\$ 87.00
Teamster OT	\$ 112.00
Teamster DT	\$ 137.00

# EXHIBIT G

**MATERIAL PROCUREMENT SCHEDULE**

ITEM DESCRIPTION	LEAD TIME
VFD	24 WEEKS
CLA-VALVE	18 WEEKS
SOLOINOID ACTUATED VALVES	18 WEEKS
DISENFECTION EQUIPMENT	12 WEEKS
PLC	20 WEEKS
FLOWMETER	8 WEEKS
PLUG VALVE	6 WEEKS
ELECTRICAL SWITCHGEAR	12 WEEKS